TDD FDD AIR INTERFACE

ABSTRACT OF THE DISCLOSURE

Downlink and uplink frequencies in a wireless access system are time-shared by adjacent sectors, but remain dedicated to downlink or uplink transmission and may utilize FDD-only bandwidth within the MMDS spectrum. TDD wireless access equipment need only be modified by introducing a frequency change at the normal TDD guard point, with respective downlink or uplink periods for adjacent sectors offset to form overlapping frames. Cyclo-stationary processing, block equalization, and burst timing coordination allow the boundary between downlink and uplink portions of both frames to be set dynamically, improving spectral efficiency. Fast frequency switching within an allotted physical slot enables synchronization of time-sharing the dedicated frequencies to be maintained among sectors and cells. Duplex spacing between downlink and uplink frequencies for a given sector and adjacent sectors, combined with in-depth filtering of received signals, prevents spurious out-of-band transmission signal strength from reaching an interference level.